Preferences for Computer-Mediated Communication are Associated with Increased Sensitivity in an Emotional Face Morphing Task

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BACKGROUND

- The social-emotional impact of computer-mediated communication (CMC) remains unclear. Extant literature is often contradictory, especially concerning its potentially helpful or harmful impact on psychological well-being.
  - Recent evidence suggests that individuals who show greater emotional reactivity and sensitivity may use CMC more often to socially interact (e.g., Kowert, Domahidi, & Quandt, 2014).
- However, frequency of use may not reflect key motivations and preferences for CMC that may better predict whether CMC use is linked to positive or negative adaptation (Carpenter, 2012).
- Facial morphing has been used in social cognition research to uncover subtle individual differences in core aspects of emotional functioning, emotional sensitivity, or speed and accuracy of emotional identification.
  - Greater sensitivity to negative facial expressions has been associated with a range of emotional disruptions (Gibb, Schofield, & Coles, 2008; Kirsh, Mounts, & Olczak, 2006).
- In the present study, we implemented a newly developed self-report measure that captures both the amount of time and preferences of CMC use, thus allowing us to explore whether usage and preferences of CMC are associated with individual differences in emotional sensitivity measured via the facial morphing task.

AIMS

- **Hypothesis 1**: We predicted that people who use CMC versus face-to-face communication more often will have enhanced emotional sensitivity, as measured by facilitated performance on the facial morphing task.

- **Exploratory Hypothesis**: For a more fine-grained analysis of this question, we explored whether the link between CMC and enhanced emotional sensitivity varied depending on the goal of social communication (positive communication, expressing distress, and casual communication).

METHOD

Participants
- Ninety-one undergraduate students (72.5% females) aged 18-32 (M_{age} = 19.09, SD = 2.50).

Social Media Communication Questionnaire (SMCQ)
- The SMCQ (Babkirk, Luehring-Jones, & Dennis, under review) is a 27-item questionnaire that assesses participants' preferences to accomplish social communication goals via CMC (e.g., Facebook updates, text messages, blogging) or face-to-face interactions (includes video chat online that occurs in real time but excludes phone calls). Participants responded on a 1 (Only CMC & Never Face-to-face communication) to 7 (Never CMC & Only Face-to face communication) Likert-type scale. **Thus, higher scores indicate a stronger face-to-face preference.** The SMCQ measures three groups of communication expression: *Positive Communication* (e.g., get to know people, keep in touch with people), *Expressing Distress* (e.g., communicate worry, have a disagreement), and *Casual Communication* (e.g., communicate interest, communicate boredom).
- In addition, participants were asked to report the frequency with which they spend interacting via CMC and face-to-face on a weekly basis.
  - Participants were split into the high (n = 46) or low (n = 45) face-to-face and CMC groups based on how many hours per week they reported spending socializing face-to-face (Mdn = 20 hours per week) and using CMC (Mdn = 23.5 hours per week).

Difficulties in Emotion Regulation Scale (DERS)
- The DERS (Gratz & Roemer, 2004) is a 36-item questionnaire that measures the degree to which emotion dysregulation currently impacts an individual. Participants responded to each phrase on a 1 (Almost Never) to 5 (Almost Always) Likert-type scale. The DERS measures *Nonacceptance* of emotional responses, *Goal*-directed behavior, *Impulsivity*, Emotional *Awareness*, Access to Emotion Regulation *Strategies*, and Emotional *Clarity*.

Facial Morphing Task
- For each trial, participants were shown a 20-slide facial morph sequence of a neutral expression morphing into one of four emotions: angry, happy, sad, or fear.
- For each emotion type, 30 faces were put through the 20-slide facial morphing sequence. Accuracy and latency to identify emotions were the primary metrics. Latency was calculated using only trials in which the participant correctly identified the emotional facial expression. Latency indicates the slide at which point correct responses were made within the morphing sequence (slides 1-20).
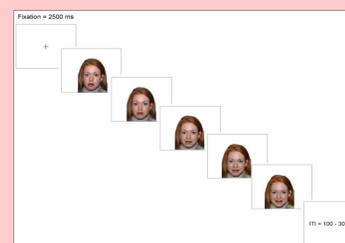
RESULTS

- Before testing hypotheses, we examined associations between CMC and individual differences in emotional difficulties.
  - A greater CMC preference for positive social communication [$r(91)$ = -.266, $p < .05$], expressing distress [$r(91)$ = -.29, $p < .01$], and overall preference [$r(91)$ = -.33, $p < .01$] were each associated with greater lack of emotional awareness.
  - More frequent CMC use was associated with greater lack of emotional clarity [$r(91)$ = .28, $p < .01$] and non-acceptance of emotional responses [$r(91)$ = .30, $p < .01$].

Hypothesis #1: Individuals who use CMC more frequently to communicate will show greater emotional sensitivity (greater accuracy, faster latencies).
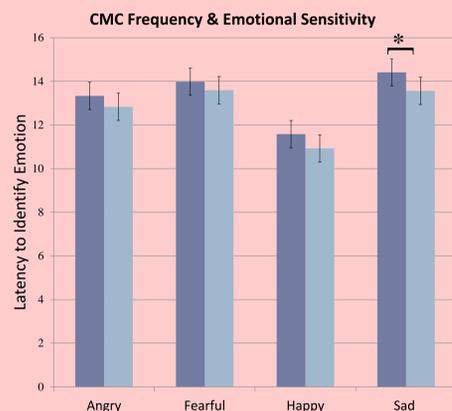

Figure 1. Those in the high versus low CMC use group group correctly identified sad expressions more quickly (M = 13.56, SD = 1.81 versus M = 14.41, SD = 1.37, < .05, $t(89)$ = 2.51, $p < .05$, d = 0.53).
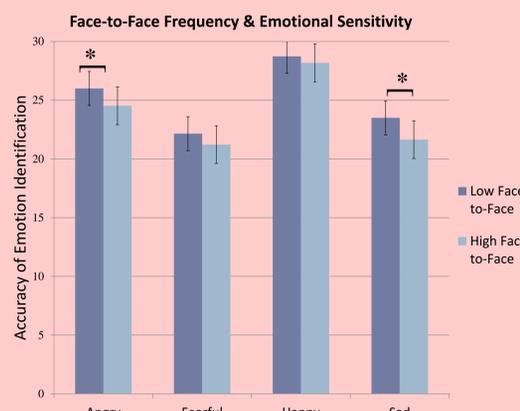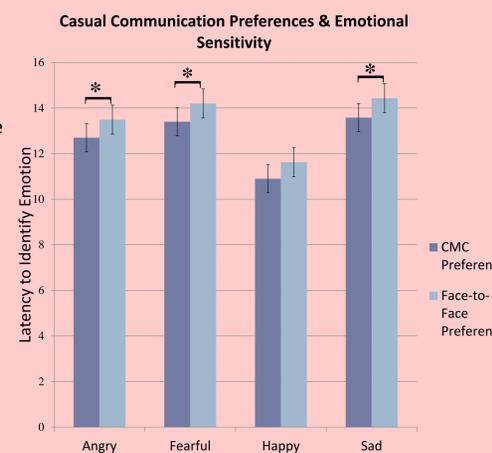
Figure 2. Those in the high versus low face-to-face use were *less* accurate in correctly identifying both angry [$t(89)$ = 2.19, $p < .05$, d = 0.46] and sad [$t(89)$ = 2.43, p d = 0.51] facial expressions.

Exploratory Hypothesis: For a more fine-grained analysis, we explored whether the link between CMC and enhanced emotional sensitivity varied depending on the goal of social communication (positive communication, expressing distress, and casual communication).

- We created groups using a median split to separate those who preferred technology vs. face-to-face for each of the four scales (positive, distress, casual, and total); we then ran t-tests using these grouping variables with latency and accuracy scores on the Facial Morphing Task.

Figure 3. Individuals reporting a CMC preference for casual communication (versus a face-to-face preference) showed greater sensitivity (faster latencies) to identify all negative emotions : angry [M = 12.70, SD = 1.72 versus M = 13.49, SD=1.37, $t(89)$ = -2.43, $p < .05$], fearful [M = 13.40, SD = 1.70 versus M = 14.20, SD = 1.67, $t(89)$ = -2.26, $p < .05$], and sad [M = 13.58, SD=1.77 versus M = 14.43, SD = 1.40, $t(89)$ = -2.53, $p < .05$].
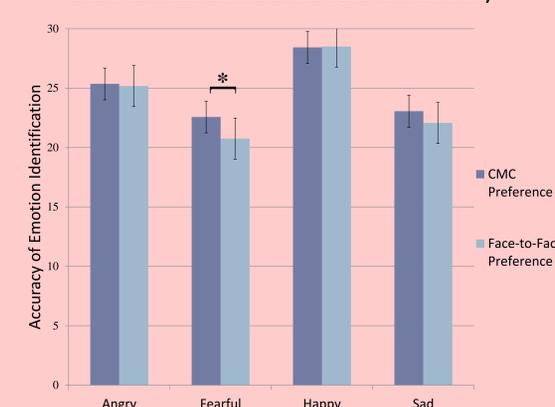

Figure 4. Individuals reporting a CMC preference for casual communication (versus a face-to-face preference) were more accurate in identifying fearful expressions [$t(89)$ = 2.15, $p < .05$].
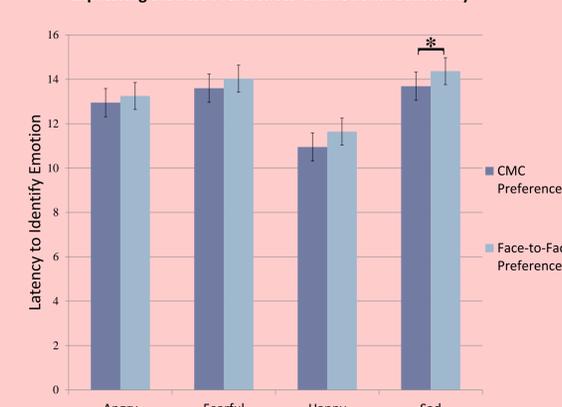

Figure 5. Individuals reporting a CMC preference for expressing distress (versus a face-to-face preference) showed greater sensitivity (faster latencies) to identify sad expressions [$t(89)$ = -1.987, p = .05; M = 13.69, SD = 1.66 versus M = 14.37, SD = 1.57].

DISCUSSION

- Results suggest that a preference for communicating via CMC may be associated with emotional sensitivity. Although no causal inferences can be made, one possibility is that individuals with greater emotional sensitivity may be drawn to CMC due to low-barrier opportunities to elicit support and engagement from others, and reduced immediate consequences for expressing negative emotion.
- Findings underscore the importance of investigating facets of CMC beyond mere usage, such as the goals of CMC use. These results indicate that CMC for casual communication appears to be linked to greater overall emotional sensitivity. In addition to this, we found that a preference to express distress via CMC (versus face-to-face) was associated with greater fear sensitivity specifically.
- Future research should use experimental paradigms to examine whether CMC use and goals causally influence social-emotional functioning.

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